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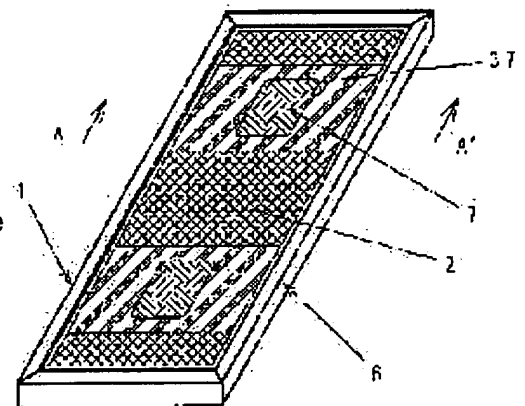
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(54) SOLAR BATTERY MODULE, ITS MANUFACTURE, ITS EXECUTION METHOD, AND ROOF AND POWDER GENERATOR USING THE SAME

(57)Abstract:

PROBLEM TO BE SOLVED: To enable a worker to stand on the central part of a large-sized panel type solar battery module, when the worker installs and fixes the module without increasing cost, but suppressing increase in number of part items and manufacturing man-hours.

SOLUTION: In the area of a solar battery module 1 excluding the side sections of the module 1, the light-receiving side surface of the module 1 is divided into at least two loading areas based on a difference in maximum allowable load per unit area, and at least a part of at least one of the two divided loading areas is clearly indicated as a walking area 7 from the light-receiving surface side so that the difference in allowable maximum loads can be recognized.



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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the solar cell module of the shape of a large-sized panel which has the field where people can ride in addition to a flank in detail about a solar cell module.

[0002]

[Description of the Prior Art] Before, the solar battery is used widely as a clean non-exhaustible energy source of supply. For this reason, development research of a solar battery is also performed variously and development of the solar cell module which suits the installation to the ground and roof superiors well especially is performed briskly. Such a solar cell module was beginning to be used for various applications, and had various requests for every application.

[0003] As one of the request of the, there is large-sized panel-ization of a solar cell module. That is, the number of sheets of the solar cell module installed even if it is the same installation area by enlarging the solar cell module of one sheet can be reduced, and while the man day for carrying out installation immobilization of the solar cell module becomes fewer, there is an advantage that the man day for electrical connection also becomes fewer.

[0004]

[Problem(s) to be Solved by the Invention] However, while there were various advantages mentioned above, there was also a trouble in forming a solar cell module into a large-sized panel.

[0005] The 1st trouble is that the weight of one solar cell module becomes very large by large-sized panel-ization of a solar cell module. For this reason, when a solar cell module was accumulated and kept, there was a possibility that a big load might be added to the solar cell module of one sheet.

[0006] By the way, if a load can be received throughout the front face of a solar cell module in case a solar cell module is accumulated, the load received per unit area is not different from the case of a small panel. However, in the installation site of a solar cell module, a solar cell module may be accumulated and kept in the location which is not leveled, or a solar cell module may be placed on other members. In such a case, possibility that a solar cell module will receive a big loading load locally is high.

[0007] Properly speaking, it is necessary to recognize which big part of a solar cell module a loading load with can be borne, and to accumulate a solar cell module. However, there was no technique of making an operator recognizing the permission loading load of a solar cell module in the present condition.

[0008] Therefore, there was a possibility of damaging a solar cell module, by giving an excessive loading load locally to a solar cell module. Moreover, an operator might be unable to accumulate a solar cell module for fear of damage on a solar cell module.

[0009] The 2nd trouble is that the distance from the flank of a solar cell module to a center section becomes far by large-sized panel-ization of a solar cell module. For this reason, to the solar cell module after installation immobilization, the hand was sufficient for the center section in a report or \*\*\*\*, and there was a possibility that unarranging on a maintenance -- a surface situation is unobservable -- might occur. For example, although people needed to ride and it needed to walk on the solar cell module for the maintenance when a large-sized panel was formed by the solar cell module, in the conventional solar cell module, a design whose walk people ride and is attained on it was not carried out positively. That is, in the design to the loading load in the conventional solar cell module, the chief aim had set by assuming a windproof load for a big load to be received on the whole solar cell module front face.

[0010] Therefore, it was not admitted positively that the force was locally added to a solar cell module -- people ride -- on a solar cell module. Because, a solar cell module is because unlike the usual structure two or more photovoltaic cells are electrically connected by electric wiring material and the thing brittle in structure reinforcement is also contained in

electric wiring material.

[0011] Even if the local force is added, in order to make it satisfactory structure to these brittle members, it is possible to prepare a reinforcement member specially. However, when a special reinforcement member is prepared, while the components of a solar cell module increase, new problems -- a manufacture man day increases, as a result cost increases -- will occur.

[0012] Then, the operator was made to ride in construction of the conventional solar cell module only on the frame material prepared in the flank of a solar cell module. This frame material is prepared in order to carry out installation immobilization of the solar cell module using this, while raising the structure reinforcement of a solar cell module.

[0013] When a large-sized panel was formed by the solar cell module, even if an operator rode on a frame, the hand had stopped however, reaching the center section of the solar cell module.

[0014] In addition, the technique of preparing supporter material in consideration of people riding on a solar cell module at a solar cell module rear-face side is indicated by JP,10-54118,A. This solar cell module reinforces a solar cell module by supporter material, and even if it is the case where people ride on a solar cell module, it raises structure reinforcement so that a solar cell module may not be damaged.

[0015] However, under the premise of making the structure where people can ride in the solar cell module surface whole region, when the solar cell module was made to form into a large-sized panel, the number of supporter material increased in connection with it, and there were problems, such as becoming cost quantity.

[0016] This invention aims at offering the solar cell module with which were proposed in view of the situation mentioned above, and suppress the increment in components mark and a manufacture man day in the solar cell module formed into the large-sized panel, cost is not made to increase, and an operator can ride on the center section at the time of an installation fixed activity.

[0017] Moreover, this invention aims at offering the manufacture approach of such a solar cell module, and the construction approach.

[0018] Furthermore, this invention aims at offering the roof and power plant which used such a solar cell module.

[0019]

[Means for Solving the Problem] The solar cell module concerning this invention is made in order to attain the purpose mentioned above, and it is set to fields other than the flank of a solar cell module. So that the front face by the side of a light-receiving side may be divided into at least two load fields based on a difference of the allowable maximum load per unit area and recognition of a difference of this allowable maximum load may be attained It is characterized by specifying at least the part in at least one load field from the light-receiving side side among said divided load fields.

[0020] By considering as such a configuration, the big field of allowable maximum load can be recognized in the front face of a solar cell module. Therefore, an operator can accumulate a solar cell module by assigning supporter material to the big field of allowable maximum load.

[0021] Moreover, it is very useful that the big field of allowable maximum load exists in the insides other than the flank of a solar cell module to the solar cell module formed into the large-sized panel. That is, since the center section cannot be supported, but a solar cell module bends or the big bending moment is added to a solar cell module in case a solar cell module is accumulated when the big field of allowable maximum load exists only in a flank, it is also considered that a solar cell module is damaged. However, such concern is lost when not only the flank of a solar cell module but the field which can support a solar cell module also in a flank exists.

[0022] Furthermore, since the small field of allowable maximum load can be recognized, giving an excessive load accidentally to a solar cell module is lost, and possibility of damaging a solar cell module becomes very small.

[0023] As for the allowable maximum load per unit area, in the above-mentioned solar cell module, it is desirable that it is the allowable maximum load in the condition of having installed the solar cell module.

[0024] By considering as such a configuration, in case the solar cell module before installation is accumulated, it is not only useful, but it can recognize the big field of allowable maximum load to the solar cell module which already carried out the completion of installation.

[0025] As for the specified load field, in the above-mentioned solar cell module, it is desirable that it is the field which people can ride on a light-receiving side side, and can be walked and which can be walked.

[0026] Since the field which can be walked can be obtained, a hand also reaches the center-section front face of a solar cell module and the center-section front face concerned can be observed in the center section of the solar cell module by considering as such a configuration, the anxiety on a maintenance is lost.

[0027] Moreover, since an operator can walk also along the center-section front face of a solar cell module as compared with working walking only along the very narrow field on the frame material of a solar cell module at the time of installation, the action range spreads and working efficiency improves.

[0028] Moreover, the whole surface of a solar cell module is not made into a walk field, but there are the following advantages in limiting a walk field only to a specific field.

[0029] It can prevent the number of the reinforcement member added to a solar cell module and supporter material increasing as the 1st advantage. While making into a walk improper field the location which arranges electric wiring material with brittle structure reinforcement at this time, the trouble of components increasing can be canceled by considering as the field which can be walked, without preparing a very easy reinforcement member or originally, structure reinforcement preparing such a reinforcement member to a certain location, enough.

[0030] As the 2nd advantage, by specifying the difference between the field which can be walked, and a walk improper field, an operator can recognize the difference among both certainly and working efficiency can be raised. That is, without specifying the field which can be walked, and a walk impossible field in a solar cell module, only by performing notes by an operation manual etc., an operator may be mistaken in the range of a field, and may damage a solar cell module.

[0031] In the above-mentioned solar cell module, as for the field which can be walked, it is desirable that at least one of the divided fields which can be walked is specified so that it may be divided into at least two based on a difference of coefficient of friction of the surface coating material of a solar cell module and recognition of a difference of this coefficient of friction may be attained.

[0032] Since the field on which an operator is the field which can be walked by considering as such a configuration, and coefficient of friction of surface coating material cannot slide easily greatly can be recognized, a solar cell module top can be walked safely and workability improves more.

[0033] In the above-mentioned solar cell module, it is desirable that the field which prohibits the field which can be walked from damaging the surface coating material of a solar cell module among the fields concerned which can be walked is specified.

[0034] Since an operator can walk a damage keepout area carefully by considering as such a configuration, the accident of damaging surface coating material by the sharp object adhering to a sole can be prevented.

[0035] In addition, the field which forbids damaging surface coating material is a high field of possibility of short-circuiting by invasion of moisture. Such short accident may lead to the performance degradation of a solar cell module, and needs to prevent the occurrence of accident beforehand.

[0036] As for the field which shows clearly, and the field which adjoins this, in the above-mentioned solar cell module, it is desirable to classify based on a difference of the shape of surface type of the cladding material which covers each field.

[0037] It forms, or it forms so that the thickness of the cladding material for a boundary line part of the field which shows clearly that the thickness of the cladding material of the field which shows clearly, and the field which adjoins this specifically differs, and the field which adjoins this may differ from the thickness of the cladding material of the field which exists in the both sides for this boundary line part, and both are classified.

[0038] By considering as such a configuration, an operator can recognize clearly the field which shows clearly, for example, the field which can be walked, by vision and the tactile sense in three dimensions.

[0039] As for the field which shows clearly, and the field which adjoins this, in the above-mentioned solar cell module, it is desirable to classify based on a difference of the shape of surface type of the cladding material which covers each field.

[0040] It forms, or it forms so that the shape of surface type of the cladding material for a boundary line part of the field which shows clearly that the shape of surface type of the cladding material of the field which shows clearly, and the field which adjoins this specifically differs, and the field which adjoins this may differ from the shape of surface type of the cladding material of the field which exists in the both sides for this boundary line part, and both are classified.

[0041] By considering as such a configuration, an operator can recognize clearly the field which shows clearly, for example, the field which can be walked, with vision and the tactile sense in three dimensions.

[0042] In the above-mentioned solar cell module, the field which shows clearly, the field which adjoins this, and any one field for a boundary line part of each field have the shape of tothing with the detailed front face of the cladding material, and, as for other fields, it is desirable to have the configuration in which the front face of the cladding material differs from said shape of detailed tothing.

[0043] In addition, not only other shape of detailed tothing but a different configuration from the shape of detailed tothing may be smooth.

[0044] By considering as such a configuration, reflection of the light in the front face of a solar cell module is different, and clear recognition is visually added by the difference of reflection of the light concerned.

- [0045] Furthermore, since coefficient of friction becomes large when the shape of surface type is a detailed concavo-convex pattern, it is hard coming to slide an operator and working efficiency improves.
- [0046] As for the field which shows clearly, and the field which adjoins this, in the above-mentioned solar cell module, it is desirable to classify based on a difference of the color of the cladding material which covers each field.
- [0047] By considering as such a configuration, an operator can recognize clearly the field which shows clearly, for example, the field which can be walked, by vision.
- [0048] In the above-mentioned solar cell module, it is desirable by attaching a dismountable web material, in case a solar cell module is used for the outermost surface by the side of the light-receiving side of a solar cell module, and displaying on this web material to classify the field which shows clearly, and the field which adjoins this.
- [0049] By considering as such a configuration, an operator can recognize clearly the field which shows clearly, for example, the field which can be walked, by vision. Furthermore, since a web material is removed after installation of a solar cell module, it it not only does not affect the generation-of-electrical-energy engine performance, but is not restrained by the constraint on a design.
- [0050] As for a web material, in the above-mentioned solar cell module, it is desirable that it is a protection web material for protecting surface coating material.
- [0051] By considering as such a configuration, the surface coating material of a solar cell module is not damaged at the time of installation.
- [0052] As for a web material, in the above-mentioned solar cell module, preparing only in the field which shows clearly is desirable.
- [0053] When the fields which can board are few solar cell modules by considering as such a configuration, what is necessary is just to use a little web material, and cost can be reduced.
- [0054] As for coefficient of friction of the front face of a web material, in the above-mentioned solar cell module, it is desirable that it is larger than coefficient of friction of the front face of other fields.
- [0055] By considering as such a configuration, possibility that an operator will slide becomes small and working efficiency improves.
- [0056] In the above-mentioned solar cell module, it is desirable to prepare the walk member which has the structure reinforcement which can be walked in the front-face side of a solar cell module, and to specify the field which can be walked by this walk member.
- [0057] The field which can be walked can be specified while being able to prepare the field which can be walked to a solar cell module by considering as such a configuration. Moreover, if this walk member top is walked by making a walk member convex at a light-receiving side side, possibility of stepping on other fields will become small.
- [0058] In the above-mentioned solar cell module, it is desirable to prepare the stopper which consists of an ingredient which has larger coefficient of friction than coefficient of friction of the charge of facing of other fields in the front face of a walk member.
- [0059] By considering as such a configuration, possibility that an operator will slide becomes small and working efficiency improves.
- [0060] In the above-mentioned solar cell module, it is desirable to prepare the stopper which consists of an ingredient which has larger coefficient of friction than coefficient of friction of the charge of facing of other fields in the front face of a walk member.
- [0061] By considering as such a configuration, the field on which an operator cannot slide easily can be formed easily, and working efficiency improves.
- [0062] As for the front face of a walk member, in the above-mentioned solar cell module, it is desirable that surface treatment is performed so that it may have larger coefficient of friction than coefficient of friction of the charge of facing of other fields.
- [0063] By considering as such a configuration, the field on which an operator cannot slide easily can be formed easily, and working efficiency improves.
- [0064] As for the cladding material, in the above-mentioned solar cell module, it is desirable for it to be located in the middle of the surface coating material which consists of a translucency resin film, the rear-face cladding material which consists of the metal back up plate, and a this surface coating material and this rear-face cladding material at least, and to have the sealing agent which consists of translucency resin for closing a photovoltaic cell.
- [0065] By considering as such a configuration, the structure of a solar cell module can be reinforced by the metal back up plate which is a rear-face cladding material. Moreover, as compared with the solar cell module which uses a glass plate for surface coating material, it can manufacture lightweight by using a resin film thin as surface coating material. Furthermore, in the field which shows clearly, and the field which adjoins this, the thickness of a cladding material can

be changed easily and the shape of surface type can also be changed easily.

[0066] In the above-mentioned solar cell module, it is desirable to specify the front-face side of the solar cell module which prepared the supporter material for supporting a solar cell module, and prepared this supporter material in the rear-face side as a field which can be walked.

[0067] By considering as such a configuration, the structure reinforcement of only the field needed by installation of a solar cell module is raised, and it becomes easy to make a walk possible.

[0068] As for a photovoltaic cell, in the above-mentioned solar cell module, it is desirable to have flexibility.

[0069] In case a solar cell module is installed by considering as such a configuration, even if it is the case where force which is incurvated to a photovoltaic cell is added, a photovoltaic cell does not break. For this reason, since it can work without caring about damage on a photovoltaic cell, working efficiency improves.

[0070] As for a solar cell module, in the above-mentioned solar cell module, it is desirable that it is building-materials one apparatus.

[0071] By considering as such a configuration, a role of building materials and a role of a solar battery can be played in coincidence. Moreover, the member for the installation tooth space for it becoming unnecessary to newly prepare the installation tooth space for installing a solar cell module and the member for immobilization, and originally installing required roofing and a required wallplate absolutely and immobilization can be made to serve a double purpose as it is by using the solar cell module of this building-materials one apparatus as building materials, such as roofing of a building, and a wallplate. Furthermore, since it is common for there to be few scaffolds as compared with the case where a stand etc. is formed and installed on the ground when installing a solar cell module in a roof or a wall, it is necessary to walk a solar cell module top, and very useful also in this point.

[0072] In the above-mentioned solar cell module, the solar cell module of building-materials one apparatus is a \*\*\*\*\* type which the water flow direction after installation and the direction of a long picture of a solar cell module are made in agreement, and installs them, and it is desirable that the field which can be walked is expanding at this long direction and parallel.

[0073] Since a motion of a water flow direction becomes free by considering as such a configuration, breadth and working efficiency of action range of an operator improve.

[0074] Each operation mentioned above is demonstrated also in the roof and power plant which used the manufacture approach of the above-mentioned solar cell module and the construction approach, and the above-mentioned solar cell module.

[0075] Especially a useful operation is explained among the operations in the roof and power plant using the manufacture approach and the construction approach, and the above-mentioned solar cell module of the above-mentioned solar cell module.

[0076] In the production process of a solar cell module the cladding material of a solar cell module The surface coating material which consists of a translucency resin film at least, and the rear-face cladding material which consists of the metal back up plate, It is located in the middle of this surface coating material and this rear-face cladding material, and has the sealing agent which consists of translucency resin for closing a photovoltaic cell. Surface \*\*\*\* material, a rear-face cladding material, a sealing agent, and a photovoltaic cell are set at this process using the process which carries out heating sticking by pressure by the vacua in one. It is desirable to make the mold member which has desired thickness and a desired configuration intervene only on said translucency resin film which should form the thickness of a cladding material thinly as compared with other fields or a part, and to carry out heating sticking by pressure by the vacua.

[0077] When such a manufacture approach is adopted, in a desired location, the thickness of a cladding material can be changed very easily. Moreover, since the process which changes the thickness of a cladding material in this way can be carried out to the process and coincidence which cover a photovoltaic cell, it does not newly need to add a process and is very useful.

[0078] Similarly it sets to the production process of a solar cell module. The cladding material of a solar cell module The surface coating material which consists of a translucency resin film at least, and the rear-face cladding material which consists of the metal back up plate, It is located in the middle of this surface coating material and this rear-face cladding material, and has the sealing agent which consists of translucency resin for closing a photovoltaic cell. It is desirable to make the mold member which has the shape of desired surface type intervene on this translucency resin film in this process using surface \*\*\*\* material, a rear-face cladding material, a sealing agent, and the process that carries out heating sticking by pressure of the photovoltaic cell by the vacua in one, and to carry out heating sticking by pressure by the vacua.

[0079] When such a manufacture approach is adopted, in a desired location, the shape of surface type of a cladding

material can be changed very easily. Thus, since the process which changes the shape of surface type of a cladding material can be carried out to the process and coincidence which cover a photovoltaic cell, it does not newly need to add a process and is very useful.

[0080] Moreover, it is desirable to manufacture a solar cell module using the photovoltaic cell which has flexibility.

[0081] Since there is no possibility that a photovoltaic cell may break even if it is the case where heating sticking by pressure of the photovoltaic cell is carried out by the vacua by using the photovoltaic cell which has flexibility, it is very useful.

[0082] Moreover, it is desirable to use the construction approach which carries out installation immobilization, walking the field which can walk a solar cell module.

[0083] While working efficiency improves by leaps and bounds as compared with the case where only the frame material top of the flank of a solar cell module is walked and installed like before by using such a construction approach, a possibility of adding an excessive load to a solar cell module disappears, and possibility that a solar cell module will be damaged decreases extremely.

[0084]

[Embodiment of the Invention] Hereafter, an example of the operation gestalt of this invention is explained based on a drawing.

[0085] The perspective view of the solar cell module which drawing 1 requires for the operation gestalt of this invention, and drawing 2 are the expanded sectional views in the AA' cutting plane in drawing 1.

[0086] As shown in drawing 2, the solar cell module 1 concerning this invention covers a photovoltaic cell 2 with surface coating material and a rear-face cladding material, and is formed by being filled up with the closure and a filler with the function of adhesion immobilization.

[0087] In the solar cell module 1 concerning this operation gestalt, it can manufacture lightweight as compared with the case where glass is used, by using the surface-protection film 4 which has translucency as \*\*ed [ surface ] material. Moreover, since the photovoltaic cell 2 has flexibility for the structure explained in full detail behind, not the rigid body like glass but the film material which has flexibility can be used for it as surface coating material.

[0088] In this solar cell module 1, a photovoltaic cell 2 is closed and adhesion fixed with this translucency resin 3 in a cladding material, using translucency resin 3 as a filler which has the function of the above-mentioned restoration.

[0089] In addition, although explained in full detail behind, in case it stops that hold a filler and a filler flows out a photovoltaic cell 2 in the closure and the process which carries out adhesion immobilization or it is made into a vacua, the glass fiber nonwoven fabric (not shown) with a thickness of 50 micrometers is used for right above [ of a photovoltaic cell 2 ] as filler maintenance material for preventing that make a path as air and an air pocket occurs. This glass fiber nonwoven fabric is united with the above-mentioned translucency resin 3, after a solar cell module 1 is formed.

[0090] Moreover, the metal back up plate 5 is used as a rear-face cladding material.

[0091] While making the structure reinforcement into sufficient thing, the frame material 6 for carrying out installation immobilization of the solar cell module 1 is formed in the flank of a solar cell module 1.

[0092] In addition, the amorphous silicon photovoltaic cell which forms an amorphous silicon semi-conductor layer on a stainless steel substrate with a thickness of 150 micrometers is used for a photovoltaic cell 2. The translucency resin 3 which is a filler uses two sheets for the front flesh side of a photovoltaic cell 2 for what formed EVA resin (ethylene-vinyl acetate copolymer) with a thickness of 450 micrometers in the shape of a sheet. As for the translucency surface-protection film 4 which is surface coating material, a gal barium steel plate with a thickness of 0.4mm is used for the metal back up plate 5 using a fluororesin film with a thickness of 50 micrometers.

[0093] The cable 10 for the output terminal section being mostly prepared in the center, and performing electric generating power in this output terminal section of the inferior surface of tongue of a solar cell module 1 is connected. The terminal box 8 for protecting the output terminal section has pasted the derivation section of this cable 10 with adhesives 9. Invasion of the moisture into a solar cell module 1 etc. is prevented by this terminal box 8. Moreover, the connector (not shown) is prepared at the tip of a cable 10, and it can connect now by one-touch to the cable connected with the adjoining solar cell module 1 or a power converter.

[0094] Next, the part which shows the description of the solar cell module 1 concerning this invention is explained.

[0095] The solar cell module 1 has divided the field of the light-receiving side side front face except a frame material 6 into two field groups based on the difference of the allowable maximum load.

[0096] In drawing 1, 37 shows the big field of allowable maximum load. In addition, in drawing 1, although the field of 37 is specified for convenience in order to help an understanding, in an actual solar cell module, it does not show clearly. Electric wiring material brittle in structure reinforcement is not arranged, but an allowable load is a big field,



and this field 37 is satisfactory even if people walk a it top. The field 7 which exists in this field 37 is a part which shows the field in the solar cell module 1 concerning this invention which can be walked, and the thickness of a cladding material is thickly formed only for that part with this operation gestalt. The field outside this field 7 is a field which forbids a walk except for a frame material 6.

[0097] Thus, the field 7 is specified as a field which it can be smaller than it and can be walked in the field 37 which can actually be walked, because the case where an operator missed his foot on the field which can be walked accidentally was taken into consideration. That is, the insurance field 37 is established in the outside of the field 7 which specified the purport which can be walked.

[0098] As this field 7 is shown in drawing 2 , since only that part is thick as compared with other fields, the thickness of a cladding material can recognize visually the field 7 which an operator can walk easily. Furthermore, since only a field 7 is convex at a light-receiving side side, possibility of making a mistake in and stepping on the field of the outside is very small.

[0099] Moreover, in case the solar cell module 1 mentioned above is installed, since an operator can walk the above-mentioned field 7 top rather than can walk only a frame material top like before, the action range of an operator spreads and workability improves by leaps and bounds.

[0100] Next, based on drawing 3 -5, how to manufacture the solar cell module 1 concerning this invention is explained briefly.

[0101] In addition, by the manufacture approach explained below, by carrying out heating sticking by pressure of the ingredient mentioned above, a resin seal is carried out and a solar cell module 1 is manufactured.

[0102] The perspective view of the fixture which uses drawing 3 for manufacture of a solar cell module 1, and drawing 4 show the process in which the ingredient for manufacturing a solar cell module is carried on the fixture, and the sectional view in BB' cutting plane of drawing 3 and drawing 5 are the perspective views of mold material.

[0103] The fixture 11 for manufacturing a solar cell module 1 is made with the plate made from aluminum, on it, carries the ingredient which should serve as the above-mentioned photovoltaic cell 2 and its cladding material, and is used.

[0104] Moreover, as the field which puts a photovoltaic cell 2 and a cladding material on the plate made from aluminum in order to achieve the function as a fixture 11 is surrounded, the slot 12 is formed, and O ring 13 created with heat-resistant resin is inserted in the slot 12. The inlet 14 for constituting a vacua inside immediately of this O ring 13 is formed, and free passage connection of the inlet 14 is made through tubing 15 at the vacuum pump (not shown).

[0105] The procedure of manufacturing the solar cell module 1 which uses the fixture 11 mentioned above is explained below.

[0106] First, it covers with the Teflon film 16 for mold release on a fixture 11. This is for translucency resin's 3 overflowing and making it not paste a fixture 11.

[0107] Next, the ingredient for pasting up in one with a photovoltaic cell 2, and forming a solar cell module 1 is accumulated one by one. That is, the translucency surface-protection.film 4 which consists of the translucency resin 3 which consists of the metal back up plate 5 which becomes order from a gal barium steel plate with a thickness of 0.4mm, and EVA resin formed with a thickness of 450 micrometers in the shape of a sheet, the photovoltaic cell 2 which consists of an amorphous silicon, a glass fiber nonwoven fabric with a thickness of 50 micrometers, this EVA resin, and a fluororesin film with a thickness of 50 micrometers is accumulated in order from the bottom on a fixture 11. At this time, a larger thing than the sheet size of EVA resin is used for the fluororesin film 4. This is for translucency resin's 3 overflowing and making it not paste other ingredient members like the Teflon film 16 for mold release with which the bottom was covered.

[0108] Furthermore, on it, in order to prepare the heights to which the cladding material became thick as a field 7 in which the above-mentioned walk is possible, the mold material 17 which is the outside shape of a field and isomorphism of this field 7 is carried. A hole 20 is made only in a desired field and this mold material 17 forms the plate with a thickness of 0.6mm made from stainless steel in it, as shown in drawing 5 . In case this mold material 17 is carried, it is necessary to put on a desired location correctly.

[0109] Thus, each ingredient was accumulated upwards, silicone rubber 18 is carried, and the pile of an ingredient is ended.

[0110] And if a vacuum pump is operated and a bulb 19 is opened, silicone rubber 18 will stick with O ring 13, the space sealed between silicone rubber 18, O ring 13, and the plate made from the aluminum of a fixture 11 will be formed, and the space concerned will be in a vacua. Thereby, the metal back up plate 5, translucency resin 3, a photovoltaic cell 2, a glass fiber nonwoven fabric, EVA resin, the translucency surface-protection film 4, and the mold material 17 are uniformly forced on a fixture 11 by atmospheric pressure through silicone rubber 18.

[0111] It supplies to a heating furnace, the fixture 11 in such a condition operating a vacuum pump, and holding a vacua. In addition, the temperature in a heating furnace is held at the temperature exceeding the melting point of the above-mentioned translucency resin 3.

[0112] And after the time amount which a chemical change to become soft and for translucency resin 2 demonstrate sufficient adhesive strength exceeding the melting point within a heating furnace completes passes, the fixture [ having held to the above-mentioned vacua ] 11 is picked out from a heating furnace. Furthermore, after a fixture 11 suspends actuation of waiting and a vacuum pump for cooling to a room temperature, silicone rubber 18 is removed and it opens from a vacua.

[0113] Thus, the field pushed away by translucency resin 3 by the mold material 17 is thin in the front face of the obtained solar cell module 1, and a cladding material is formed in it so that the part (field 7 which can be walked) of the hole 20 of the mold material 17 may become thick.

[0114] Next, each element which constitutes a solar cell module 1 is explained.

[0115] There is especially no limitation about the photovoltaic cell 2 in the solar cell module 1 concerning [photovoltaic-cell] this invention. As an example of a photovoltaic cell 2, for example, a crystal silicon photovoltaic cell, a polycrystalline silicon photovoltaic cell, an amorphous silicon photovoltaic cell, a copper indium SERENAIDO photovoltaic cell, a compound semiconductor photovoltaic cell, etc. can be used.

[0116] In addition, it is desirable to use the photovoltaic cell 2 which has flexibility in the solar cell module 1 concerning this invention. Even if it is the case where it pressurizes using the manufacture approach of the solar cell module 1 mentioned above by using the photovoltaic cell 2 which has flexibility, a photovoltaic cell 2 does not break. Moreover, since a photovoltaic cell 2 does not break, a permission loading load becomes large and can form greatly the field which can be walked. Furthermore, in case a solar cell module 1 is installed by forming greatly the field which can be walked, even if force which incurvates a photovoltaic cell 2 is added, possibility that a photovoltaic cell 2 will break becomes very low.

[0117] The following is mentioned as a cladding material used for the solar cell module 1 concerning [cladding material] this invention.

[0118] (Surface coating material) It is arranged among cladding materials at a front-face side, and there is especially no limitation as surface coating material which achieves the duty which protects a solar battery. As an example of surface coating material, although a glass plate may be used, a solar cell module 1 can be preferably manufactured lightweight by using a surface-protection film. Furthermore, as for the surface-protection film, what has weatherability is desirable, for example, a fluoro-resin film etc. can be used.

[0119] When a surface-protection film is used, as mentioned above, the shape of surface type of a cladding material can be easily formed in various configurations by carrying out heating sticking by pressure and manufacturing a solar cell module 1.

[0120] (Filler) As a filler which is a cladding material which carries out closure immobilization of the photovoltaic cell 2, and commits adhesion with surface coating material and a rear-face cladding material, translucency resin is desirable.

[0121] As this translucency resin, an ethylene-vinylacetate copolymer (EVA), polyvinyl BUCHIRORU, silicon resin, etc. are mentioned, for example.

[0122] While having thermoplasticity in order to carry out heating sticking by pressure and to manufacture a solar cell module 1 as mentioned above, the ingredient which has an adhesive property is desirable and it is desirable to be especially formed in the shape of a sheet.

[0123] (Rear-face cladding material) There is especially no limitation as a rear-face cladding material which achieves the duty which is arranged among cladding materials at a rear-face side, and protects a solar battery. As an example of a rear-face cladding material, it is desirable to use for example, the metal back up plate. By using the metal back up plate, the solar cell module 1 with strong structure reinforcement can be offered.

[0124] Moreover, if an ingredient is illustrated, also in a metallic material, the thing excellent in weatherability and corrosion resistance will be desirable, for example, a steel plate with weatherproof matter, such as a fluoro-resin and a vinyl chloride, a stainless steel plate, etc. will be further mentioned on a galvanized steel sheet or them.

[0125] (Filler maintenance material) When prevent holding a filler in filler maintenance material and flowing into it in the production process of the solar cell module 1 mentioned above etc., it prevents that make a path as air and an air pocket occurs in case it is made a vacua or the accident by which a cladding material front face is damaged by the sharp body occurs, it is required that the duty which raises \*\*\*\*\*-proof which protects a photovoltaic cell, and which is capacity should be achieved.

[0126] Therefore, as filler maintenance material arranged in a filler, although a glass fiber nonwoven fabric, glass fiber

textile fabrics, the nonwoven fabric of an organic material, etc. are mentioned, it is not limited to this.

[0127] [Solar cell module] The solar cell module 1 concerning this invention is not especially limited in fields other than a flank except the front face by the side of a light-receiving side being divided into at least two load fields based on a difference of the allowable maximum load per unit area, among those at least one load field being specified. However, by being a large-sized panel-like solar cell module, the description of this invention is employed efficiently and it is effective.

[0128] Moreover, about the gestalt, although it is not necessary to have even if it has the frame material in the flank, it is desirable that it is the solar cell module of building-materials one apparatus which has the gestalt which can suit as building materials. That is, when installing in the roof of a building etc., it is because it is effective when raising workability that the field which can be walked is specified in the location which cannot make a scaffold easily.

[0129] [Field divided based on a difference of allowable maximum load] In fields other than the flank of the solar cell module 1 concerning this invention, when dividing the front face by the side of a light-receiving side into at least two load fields, it is not restricted to dividing by the load range in consideration of people walking allowable maximum load per desired unit area like the operation gestalt which should just use and was mentioned above.

[0130] Moreover, it is not necessary to specify the whole region of the divided field. That is, although field division is carried out by whether people are able to walk, you may make it specify a part of the field which can be walked in the operation gestalt mentioned above.

[0131] [Walk member] Although this walk member is not limited especially when using a walk member with the structure reinforcement which can be walked to the solar cell module 1 concerning this invention, it is desirable to consist of ingredients with sufficient weatherability. That is, it is because the ingredient which it is also considered that people will walk a solar cell module 1 top again to a number of years or the back after installing a solar cell module 1, and is not carrying out on-the-strength degradation then, and can maintain sufficient structure reinforcement is called for.

[0132] Moreover, coefficient of friction on the front face of a member is larger than coefficient of friction of other fields of a solar cell module, and it is desirable that it has been hard coming to slide an operator. That is, it is desirable to perform surface treatment which has larger coefficient of friction on the front face of a walk member in forming the front face of a walk member with the ingredient which has larger coefficient of friction than coefficient of friction of other fields than coefficient of friction of other fields.

[0133]

[Example] Hereafter, based on examples 1-4, the concrete configuration of the solar cell module concerning this invention is explained. In addition, the solar cell module concerning this invention is not limited to these examples.

[0134] The solar cell module 1 of the [example 1] example 1 prepares the field where coefficient of friction of surface coating material is larger than coefficient of friction of other surface coating material, and is characterized by specifying it so that an operator may not slide in the field specified as a field which can be walked.

[0135] It is an expanded sectional view in the AA' cutting plane [ in / drawing 6 , and / in drawing 7 / drawing 6 ]. [ the perspective view of the solar cell module of an example 1 ]

[0136] In addition, the same sign is given to the member which has the same function as the operation gestalt mentioned above, and explanation is omitted. Moreover, about the operation effectiveness of the solar cell module 1 of an example 1, and the matter which is not mentioned specially in addition to this, it is the same as that of the solar cell module 1 concerning the operation gestalt mentioned above almost.

[0137] As shown in drawing 6 and 7, the field 21 which can walk a solar cell module 1 specifies the field by thickening thickness of \*-ed material. Moreover, the field 22 where coefficient of friction of surface coating material is bigger than coefficient of friction of other surface coating material is established in the center section of the field 21 which can be walked, and the operator is taking care not to slide on it by making the shape of surface type of surface coating material into the shape of detailed tothing.

[0138] Almost like the solar cell module 1 concerning the operation gestalt mentioned above, by the vacua, the solar cell module 1 of an example 1 carries out heating sticking by pressure, and is manufactured.

[0139] However, in the manufacture approach of the solar cell module 1 of an example 1, the points in which the shape of detailed tothing was formed differ by carrying the mesh material created with the wire rod (0.3mm of wire sizes) of aluminum to the hole of the mold material created by the plate made from stainless steel.

[0140] The solar cell module 24 of the [example 2] example 2 consists of a solar cell module 24 of \*\*\*\*\* type roofing one apparatus which a water flow direction and the direction of a long picture of a solar cell module 24 are made in agreement, and installs them, and is characterized by having the field which is extended in the direction of a long picture in the crosswise center section and which can be walked.

[0141] Signs that drawing 8 carried out the solar cell module 24 of an example 2 at the perspective view of the solar cell module 24 of an example 2, and drawing 10 carried out installation construction on the roof are shown, and it is an expanded sectional view in cutting plane CC'.

[0142] In addition, about the operation effectiveness of the solar cell module 24 of an example 2, and the matter which is not mentioned specially in addition to this, it is the same as that of the solar cell module 1 concerning the operation gestalt mentioned above almost.

[0143] As shown in drawing 8, the flank which is a long picture was bent, and starts to a light-receiving side side, and the solar cell module 24 of an example 2 has the section 30, and serves as the so-called batten-seam type of roofing one apparatus.

[0144] In order to carry out installation construction of the solar cell module 24 of an example 2, as shown in drawing 10, a rafter 29 is fixed on sarking 28 and the flank which a solar cell module 24 starts on this rafter 29, and has the section 30 is carried. And the adjoining solar cell module 24 starts, hang in the section 30, a child 31 is made engaged, and it fixes on the drill screw 32. Furthermore, the bridging 33 was carried, it fixed upwards on the drill screw 34, and the cap material 35 is attached.

[0145] As shown in drawing 8, the supporting material 23 with a cross-section configuration similar to a rafter 29 is formed in the crosswise center section by the side of the rear face of this solar cell module 24. And to the supporting-material 22 up side, the metal back up plate which is a rear-face cladding material is prepared, it is colored deep green, for example and this metal back up plate is specified as a field 26 which can be walked.

[0146] This field 26 that can be walked is a field where a photovoltaic cell and electric wiring material are not arranged, and since there is supporter material 23 in a rear-face side, the permission loading load is large.

[0147] In addition, in the operation gestalt mentioned above, although the field 7 which can be walked is small specified in the field 37 which is not specified in fact and which can be walked, in an example 2, the whole region of the field which can be walked is specified as a field 26.

[0148] In the batten-seam type solar cell module 24 of an example 2, the width of face is about 900mm. This corresponds twice [ about ] as compared with the width of face of metal batten-seam roofing used from the former being about 450mm. Therefore, since the field 26 which can be walked is equivalent to a part for the height 38 arranged since the conventional batten-seam roofing is fixed, for an operator, the field 26 which can be walked will exist in a convenient location, and working efficiency improves.

[0149] That is, it is that the operator who has experience which constructed the conventional metal roofing performs construction of a solar cell module 24 of roofing one apparatus like an example 2 in most cases, for example, in case batten-seam type roofing is constructed, an operator usually becomes convenient for an operator in order to walk a part for the height 38 arranged since batten-seam roofing is fixed. Moreover, many members crowd and are arranged at a part for the height 38, and since structure reinforcement is a high part, it turns out that it is suitable for the walk, so that clearly from drawing 10.

[0150] As mentioned above, \*\*\*\*\* is done with the solar cell module 24 of building-materials one apparatus by carrying out installation construction of the solar cell module 24 of an example 2. Therefore, since the field [ \*\*\*\* ] which can be walked will be specified by the water flow direction and it will exist in it, an operator can do freely movable [ of this field that can be walked ], and working efficiency improves by leaps and bounds.

[0151] In addition, in this roof, the solar cell module of several sheets is electrically connected to the serial, and the solar cell module array which outputs a desired electrical potential difference is formed. Moreover, it connects with the power converter which changes direct current power into alternating current power via a joint box with a disconnecter, and the output from the positive electrode and negative electrode of a solar cell module array of the number group of these serves as a generation-of-electrical-energy system which is connected with the distribution line of an electric power company and in which a head-tide style is possible.

[0152] It is characterized by forming the web material 40 which forms the solar cell module 39 of the [example 3] example 3 in the front face of surface coating material only in the field which can be walked.

[0153] Drawing 9 is the perspective view of the solar cell module 39 of an example 3.

[0154] In addition, about the operation effectiveness of the solar cell module 39 of an example 3, and the matter which is not mentioned specially in addition to this, it is the same as that of the solar cell module 24 of the example 2 mentioned above almost.

[0155] In an example 2, although the field which can be walked is specified by coloring it the metal back up plate, a \*\*\*\*\* possible field is specified in an example 3 to form a web material 40.

[0156] This web material 40 is stuck on the surface coating material front face by adhesion material, the front face of a web material 40 has bigger coefficient of friction than a surface coating material front face, and the operator has

stopped being able to slide on it easily.

[0157] Moreover, since a web material 40 is removed after the completion of installation of a solar cell module 39, even if it may damage a web material 40 by an operator's sole, it is satisfactory at all. Furthermore, since a web material 40 does not affect the appearance after installation, a showy color can be chosen in the first place for it being easy to recognize an operator.

[0158] In addition, in an example 3, although the field which can be walked is specified by preparing a web material only in the field which can be walked, a web material 40 is formed throughout a solar cell module front face, it is colored only the field which can be walked, that is specified, and making it transparenance so that the arrangement range of a photovoltaic cell can recognize other fields easily is also considered. In case the web material 40 of a transparent part can also achieve the function as protection material of the resin film which is surface coating material and deals with a solar battery by this, it can prevent damaging this resin film accidentally.

[0159] The solar cell module 25 of the [example 4] example 4 is characterized by preparing a walk member only in the field which can be walked.

[0160] Signs that drawing 11 carried out the solar cell module of an example 4 at the perspective view of the solar cell module of an example 4, and drawing 12 carried out installation construction on the roof are shown, and it is an expanded sectional view in cutting plane DD'.

[0161] In addition, the same sign is given to the member which has the same function as the example 2 mentioned above, and explanation is omitted. Moreover, about the operation effectiveness of the solar cell module 25 of an example 4, and the matter which is not mentioned specially in addition to this, it is the same as that of the solar cell module 24 of the example 2 mentioned above almost.

[0162] As shown in drawing 12 , the solar cell module 25 of an example 4 prepares the field which can be walked in the center section of the cross direction, and attaches the walk member 27 in the field which can be walked on the drill screw 36. This drill screw 36 is thrust into supporting material 23, and supporting material 23 is also fixed to construction and coincidence of a solar cell module 25 by the solar cell module 25.

[0163] In addition, with the solar cell module 25 of an example 4, since the walk member 27 is convex at a front-face side, there is an advantage that possibility that an operator will step on the surrounding walk improper field of the walk member 27 is small, so that clearly from drawing 12 .

[0164]

[Effect of the Invention] As explained above, the solar cell module concerning this invention divides the front face into two or more fields based on a difference of the allowable maximum load per unit area, and the difference of this allowable maximum load shows clearly that recognition becomes possible.

[0165] Therefore, in case a solar cell module is dealt with, while it becomes clear which part an operator should pay attention and working efficiency improves, possibility of damaging a solar cell module becomes small.

[0166] For example, by specifying the field which can be walked to a solar cell module, an operator can recognize the field which can be walked and can walk a solar cell module top. For this reason, breadth and installation workability of the field of an operator which can be acted improve greatly. Moreover, by specifying the field which can be walked, a possibility of adding a big loading load to electric wiring material with brittle structure reinforcement etc. accidentally disappears, and there is also an advantage that possibility that a solar cell module will be damaged becomes very small.

[0167] Furthermore, since components mark and a manufacture man day do not increase, cost can be reduced.

[0168] Each effectiveness mentioned above is demonstrated also in the roof and power plant which used the manufacture approach of the above-mentioned solar cell module and the construction approach, and the above-mentioned solar cell module.

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[Translation done.]

## \* NOTICES \*

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- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

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CLAIMS

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## [Claim(s)]

[Claim 1] The solar cell module characterized by specifying at least the part in at least one load field from the light-receiving side side among said divided load fields so that the front face by the side of a light-receiving side may be divided into at least two load field depiction based on a difference of the allowable maximum load per unit area and recognition of a difference of this allowable maximum load may be attained in fields other than the flank of a solar cell module.

[Claim 2] The allowable maximum load per said unit area is a solar cell module according to claim 1 characterized by being the allowable maximum load in the condition of having installed said solar cell module.

[Claim 3] Said specified load field is a solar cell module according to claim 2 characterized by being the field which people can ride on a light-receiving side side, and can be walked, and which can be walked.

[Claim 4] Said field which can be walked is a solar cell module according to claim 3 characterized by specifying at least one of said divided fields which can be walked so that it may be divided into at least two based on a difference of coefficient of friction of the surface coating material of said solar cell module and recognition of a difference of this coefficient of friction may be attained.

[Claim 5] The solar cell module according to claim 3 or 4 characterized by specifying the field which prohibits said field which can be walked from damaging the surface coating material of said solar cell module among the fields concerned which can be walked.

[Claim 6] The field which performs said designation, and the field which adjoins this are the solar cell module of claim 1-5 characterized by classifying based on a difference of the thickness of the cladding material which covers each field given in any 1 term.

[Claim 7] The field which performs said designation, and the field which adjoins this are the solar cell module of claim 1-6 characterized by classifying based on a difference of the shape of surface type of the cladding material which covers each field given in any 1 term.

[Claim 8] It is the solar cell module according to claim 7 which the field which performs said designation, the field which adjoins this, and any one field for a boundary line part of each field have the shape of tothing with the detailed front face of the cladding material, and is characterized by other fields having the configuration in which the front face of the cladding material differs from said shape of detailed tothing.

[Claim 9] The field which performs said designation, and the field which adjoins this are the solar cell module of claim 1-8 characterized by classifying based on a difference of the color of the cladding material which covers each field given in any 1 term.

[Claim 10] The solar cell module of claim 1-9 characterized by classifying the field which performs said designation by attaching a dismountable web material in it in case said solar cell module is used for the outermost surface by the side of the light-receiving side of said solar cell module, and displaying on this web material, and the field which adjoins this given in any 1 term.

[Claim 11] Said web material is a solar cell module according to claim 10 characterized by being a protection web material for protecting surface coating material.

[Claim 12] Said web material is a solar cell module according to claim 10 characterized by being prepared only in the field which performs said designation.

[Claim 13] Coefficient of friction of the front face of said web material is the solar cell module of claim 10-12 characterized by being larger than coefficient of friction of the front face of other fields given in any 1 term.

[Claim 14] The solar cell module of claim 1-13 which prepares the walk member which has the structure reinforcement which can be walked in the front-face side of said solar cell module, and is characterized by specifying said field which can be walked by this walk member given in any 1 term.

[Claim 15] Coefficient of friction of the front face of said walk member is a solar cell module according to claim 14 characterized by being larger than coefficient of friction of the front face of other fields.

[Claim 16] The solar cell module according to claim 15 characterized by preparing the stopper which consists of an ingredient which has larger coefficient of friction than coefficient of friction of the charge of facing of other fields in the front face of said walk member.

[Claim 17] The front face of said walk member is a solar cell module according to claim 15 characterized by performing surface treatment so that it may have larger coefficient of friction than coefficient of friction of the charge of facing of other fields.

[Claim 18] The cladding material of said solar cell module is the solar cell module of claim 1-17 characterized by being located in the middle of the surface coating material which consists of a translucency resin film, the rear-face cladding material which consists of the metal back up plate, and a this surface coating material and this rear-face cladding material at least, and having the sealing agent which consists of translucency resin for closing a photovoltaic cell given in any 1 term.

[Claim 19] The solar cell module of claim 3-18 characterized by specifying the front-face side of said solar cell module which prepared the supporter material for supporting said solar cell module, and prepared this supporter material in the rear-face side of said solar cell module as a field which can be walked given in any 1 term.

[Claim 20] Said photovoltaic cell is the solar cell module of claim 1-19 characterized by having flexibility given in any 1 term.

[Claim 21] Said solar cell module is a solar cell module of claim 1-20 characterized by being building-materials one apparatus given in any 1 term.

[Claim 22] The solar cell module of said building-materials one apparatus is a solar cell module according to claim 21 with which it is the \*\*\*\*\* type which the water flow direction after installation and the direction of a long picture of said solar cell module are made in agreement, and installs them, and said field which can be walked is characterized by being expanding at this long direction and parallel.

[Claim 23] The manufacture approach of the solar cell module characterized by specifying at least the part in at least one load field from a light-receiving side side among said divided load fields so that the front face by the side of a light-receiving side may be divided into at least two load fields based on a difference of the allowable maximum load per unit area and recognition of a difference of this allowable maximum load may be attained in fields other than the flank of a solar cell module.

[Claim 24] The allowable maximum load per said unit area is the manufacture approach of the solar cell module according to claim 23 characterized by being the allowable maximum load in the condition of having installed said solar cell module.

[Claim 25] Said specified load field is the manufacture approach of the solar cell module according to claim 24 characterized by being the field which people can ride on a light-receiving side side, and can be walked, and which can be walked.

[Claim 26] Said field which can be walked is the manufacture approach of the solar cell module according to claim 25 characterized by specifying at least one of said divided fields which can be walked so that it may divide and form in at least two based on a difference of coefficient of friction of the surface coating material of said solar cell module and recognition of a difference of this coefficient of friction may be attained.

[Claim 27] The manufacture approach of the solar cell module according to claim 25 or 26 characterized by specifying the field which forbids damaging the surface coating material of said solar cell module among the fields concerned which can be walked in said field which can be walked.

[Claim 28] The field which performs said designation, and the field which adjoins this are the manufacture approach of the solar cell module of claim 23-27 characterized by forming so that it may become classifiable based on a difference of the thickness of the cladding material which covers each field given in any 1 term.

[Claim 29] The surface coating material which the cladding material of said solar cell module turns into from a translucency resin film at least, It is located in the middle of the rear-face cladding material which consists of the metal back up plate, and a this surface coating material and this rear-face cladding material. In the process which has the sealing agent which consists of translucency resin for closing a photovoltaic cell, and carries out heating sticking by pressure of said surface \*\*\*\* material, said rear-face cladding material, said sealing agent, and said photovoltaic cell by the vacua in one The manufacture approach of the solar cell module according to claim 28 characterized by making the mold member which has desired thickness and a desired configuration intervene only on said translucency resin film which should form the thickness of said cladding material thinly as compared with other fields or a part, and carrying out heating sticking by pressure by the vacua.



[Claim 30] The field which performs said designation, and the field which adjoins this are the manufacture approach of the solar cell module of claim 23-29 characterized by forming so that it may become classifiable based on a difference of the shape of surface type of the cladding material which covers each field given in any 1 term.

[Claim 31] It is the manufacture approach of the solar cell module according to claim 30 characterized by forming the field which performs said designation, the field which adjoins this, and any one field for a boundary line part of each field so that the front face of the cladding material may serve as the shape of detailed toothing, and forming other fields so that the front face of the cladding material may serve as a different configuration from said shape of detailed toothing.

[Claim 32] The surface coating material which the cladding material of said solar cell module turns into from a translucency resin film at least, It is located in the middle of the rear-face cladding material which consists of the metal back up plate, and a this surface coating material and this rear-face cladding material. In the process which has the sealing agent which consists of translucency resin for closing a photovoltaic cell, and carries out heating sticking by pressure of said surface \*\*\*\* material, said rear-face cladding material, said sealing agent, and said photovoltaic cell by the vacua in one The manufacture approach of the solar cell module according to claim 30 or 31 characterized by making the mold member which has the shape of desired surface type intervene on this translucency resin film, and carrying out heating sticking by pressure by the vacua.

[Claim 33] The field which performs said designation, and the field which adjoins this are the manufacture approach of the solar cell module of claim 23-32 characterized by forming so that it may become classifiable based on a difference of the color of the cladding material which covers each field given in any 1 term.

[Claim 34] The manufacture approach of the solar cell module of claim 23-33 characterized by distinguishing the field which performs said designation by attaching a dismountable web material in it in case said solar cell module is used for the outermost surface by the side of the light-receiving side of said solar cell module, and displaying on this web material, and the field which adjoins this given in any 1 term.

[Claim 35] Said web material is the manufacture approach of the solar cell module according to claim 34 characterized by being a protection web material for protecting surface coating material.

[Claim 36] Said web material is the manufacture approach of the solar cell module according to claim 35 characterized by preparing only in the field which performs said designation.

[Claim 37] Coefficient of friction of the front face of said web material is the manufacture approach of the solar cell module of claim 34-36 characterized by being larger than coefficient of friction of the front face of other fields given in any 1 term.

[Claim 38] The manufacture approach of the solar cell module of claim 23-37 which prepares the walk member which has the structure reinforcement which can be walked in the front-face side of said solar cell module, and is characterized by specifying said field which can be walked by this walk member given in any 1 term.

[Claim 39] The manufacture approach of the solar cell module according to claim 38 characterized by preparing the stopper which consists of an ingredient which has larger coefficient of friction than coefficient of friction of the charge of facing of other fields in the front face of said walk member.

[Claim 40] The front face of said walk member is the manufacture approach of the solar cell module according to claim 38 characterized by performing surface treatment so that it may have larger coefficient of friction than coefficient of friction of the charge of facing of other fields.

[Claim 41] The cladding material of said solar cell module is the manufacture approach of the solar cell module of claim 23-40 characterized by being located in the middle of the surface coating material which consists of a translucency resin film, the rear-face cladding material which consists of the metal back up plate, and a this surface coating material and this rear-face cladding material at least, and having the sealing agent which consists of translucency resin for closing a photovoltaic cell given in any 1 term.

[Claim 42] The manufacture approach of the solar cell module of claim 23-41 characterized by specifying the front-face side of said solar cell module which prepared the supporter material for supporting said solar cell module, and prepared this supporter material in the rear-face side of said solar cell module as a field which can be walked given in any 1 term.

[Claim 43] Said photovoltaic cell is the manufacture approach of the solar cell module of claim 23-42 characterized by having flexibility given in any 1 term.

[Claim 44] Said solar cell module is the manufacture approach of the solar cell module of claim 23-43 characterized by being building-materials one apparatus given in any 1 term.

[Claim 45] The solar cell module of said building-materials one apparatus is the manufacture approach of a solar cell module according to claim 44 that it is the \*\*\*\*\* type which the water flow direction after installation and the



direction of a long picture of said solar cell module are made in agreement, and installs them, and said field which can be walked is characterized by being expanding at this long direction and parallel.

[Claim 46] The roof characterized by constructing the solar cell module of building-materials one apparatus according to claim 21 or 22.

[Claim 47] The construction approach of the solar cell module characterized by carrying out installation immobilization of said solar cell module, walking said field which can be walked in the site which carries out installation immobilization of said solar cell module using the solar cell module of claim 1-20 given in any 1 term.

[Claim 48] Said solar cell module is the construction approach of the solar cell module according to claim 47 characterized by being the solar cell module of building-materials one apparatus according to claim 21 or 22.

[Claim 49] The power plant characterized by having the power converter connected to the solar cell module and this solar cell module of claim 1-22 given in any 1 term.

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[Translation done.]

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3. In the drawings, any words are not translated.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] The perspective view showing the operation gestalt of the solar cell module concerning this invention.

[Drawing 2] The expanded sectional view showing the operation gestalt of the solar cell module concerning this invention.

[Drawing 3] The perspective view showing the fixture for manufacturing the solar cell module concerning this invention.

[Drawing 4] The sectional view showing signs that the solar cell module concerning this invention is manufactured.

[Drawing 5] The perspective view showing the member for manufacturing the solar cell module concerning this invention.

[Drawing 6] The perspective view showing the solar cell module of the example 1 concerning this invention.

[Drawing 7] The expanded sectional view showing the solar cell module of the example 1 concerning this invention.

[Drawing 8] The perspective view showing the solar cell module of the example 2 concerning this invention.

[Drawing 9] The perspective view showing the solar cell module of the example 3 concerning this invention.

[Drawing 10] The expanded sectional view showing the anchoring cross section of the solar cell module of the example 2 concerning this invention.

[Drawing 11] The perspective view showing the solar cell module of the example 4 concerning this invention.

[Drawing 12] The expanded sectional view showing the anchoring cross section of the solar cell module of the example 4 concerning this invention.

[Description of Notations]

1, 24, 25, 39 Solar cell module

2 Photovoltaic Cell

3 Translucency Resin

4 Translucency Surface-Protection Film

5 Metal Back Up Plate

6 Frame Material

7, 21, 26, 27 Field which can be walked

8 Terminal Box

9 Adhesives

10 Cable

11 Fixture

12 Slot

13 O Ring

14 Inlet

15 Tubing

16 Teflon Film

17 Mold Material

18 Silicone Rubber

19 Bulb

20 Hole

22 Field Where Coefficient of Friction is Big

23 Supporter Material

28 Sarking

29 Rafter  
30 Start and it is Section.  
31 Hang and He is Child.  
32, 34, 36 Drill screw  
33 Bridging  
35 Cap Material  
37 Big Field of Allowable Maximum Load  
38 A Part for Height  
40 Web Material

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[Translation done.]

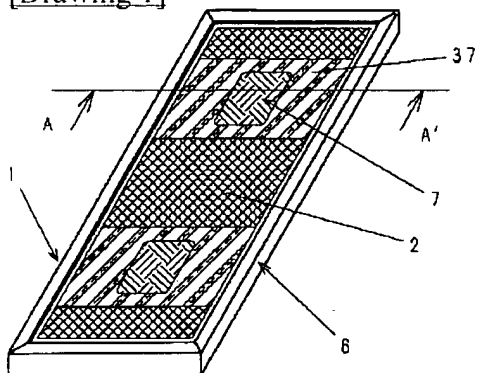
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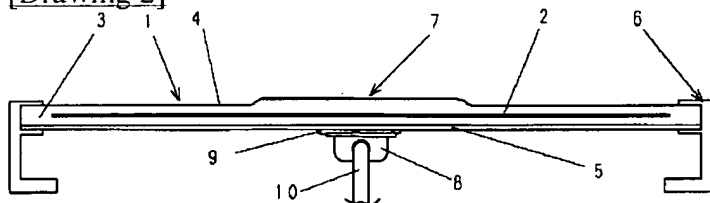
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## DRAWINGS

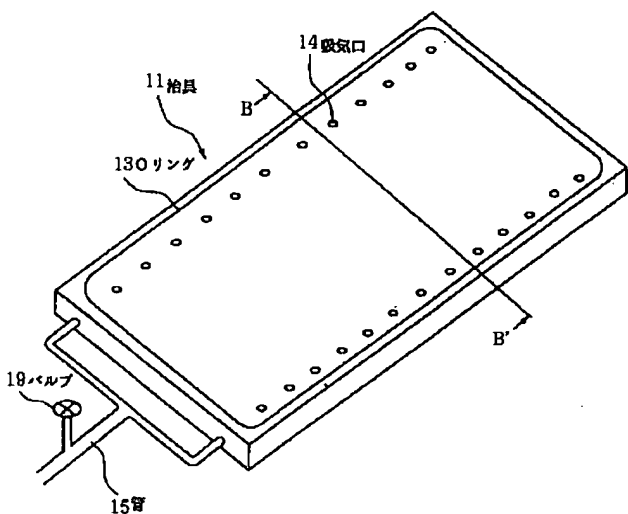
[Drawing 1]



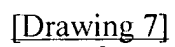
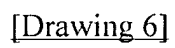
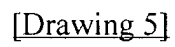
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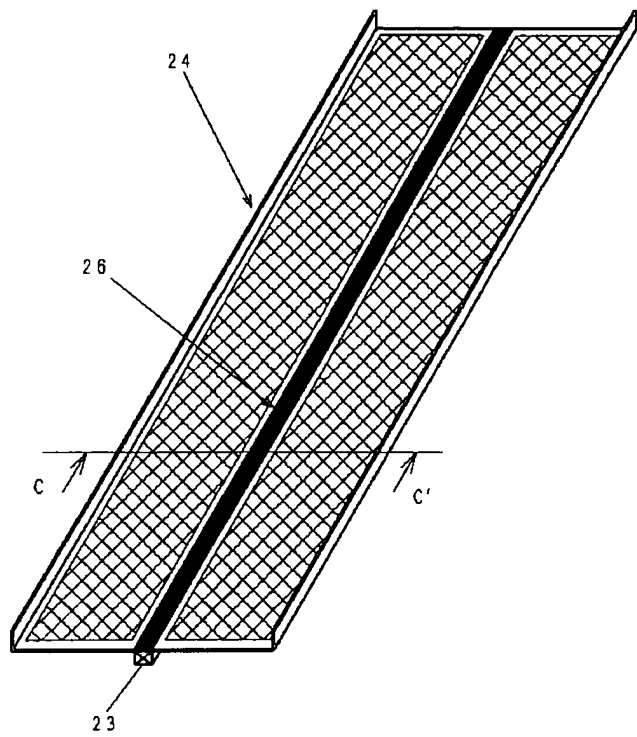


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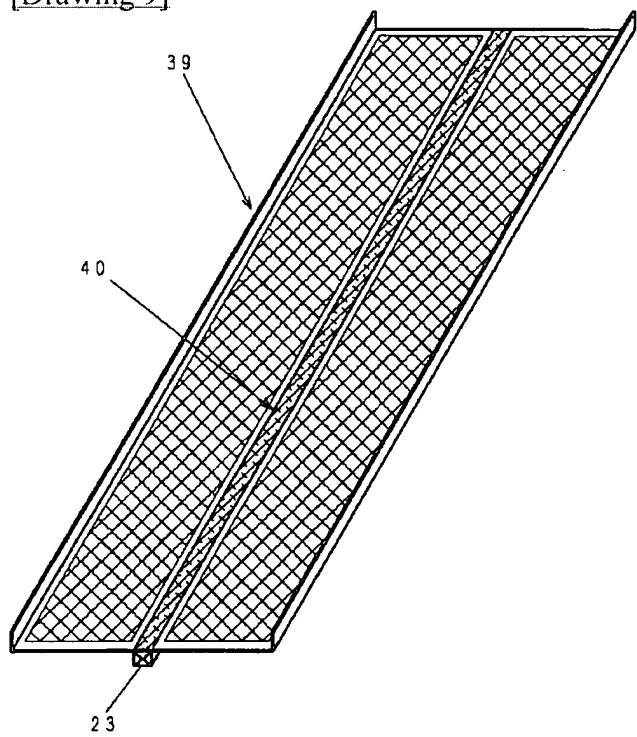


[Drawing 4]

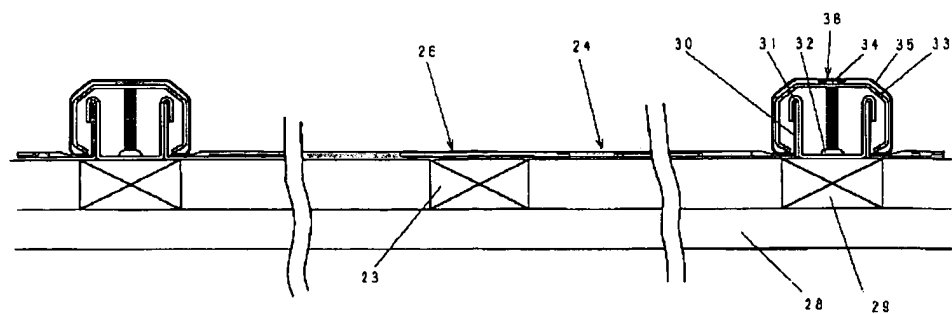




[Drawing 9]



[Drawing 10]



Technical drawing of a track section. The drawing shows a horizontal track with a central joint. On the left, there is a fastener assembly labeled 25. The track itself is labeled 23. In the center, there is a joint assembly labeled 27, with a component labeled 38. To the right of the joint, there is another fastener assembly labeled 30. This assembly includes a component labeled 36, and several other parts labeled 31, 32, 34, 35, and 33. The track is supported by a base labeled 28, and there are additional components labeled 29 and 38.

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